

KENNETH KAUFMANN ATTORNEY AT LAW

1785 Willamette Falls Drive • Suite 5
West Linn, OR 97068

office (503) 230-7715
fax (503) 972-2921

Kenneth E. Kaufmann
ken@kaufmann.law

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VIA ELECTRONIC MAIL (matthew.loftus@pacificorp.com)

Mr. Matt Loftus
Senior Transmission Counsel
PacifiCorp
825 NE Multnomah, Suite 1600
Portland, OR 97232

Subject: **Sunthurst Energy, LLC (Sunthurst)**
Oregon Community Solar Projects 024, 062, and 063 interconnections

Dear Mr. Loftus:

My June 2 letter included an attached list of technical questions regarding PacifiCorp findings in the Oregon Community Solar (OCS) 062 and OCS 063 System Impact Study (SIS) Reports, and asked that PacifiCorp toll its deadline for executing the Facilities Study Agreement while the technical questions were resolved. PacifiCorp provided responses to nearly all questions for OCS 063 on June 4 (which I address below), and you also sent a response letter dated June 9. PacifiCorp, through Kris Bremer, responded to questions regarding OCS 024 on June 18. **But as of today, Sunthurst has not received responses to the OCS 062 questions on page 5 of my June 2 letter** (attached hereto as **Attachment A**). I respond to PacifiCorp's June 4 and June 9 letters below.

Feeder drawings. Sunthurst requested drawings of PacifiCorp feeders in the near vicinity of OCS 024, 062, and 063 so that it could understand the changes to PacifiCorp's system as they affect Sunthurst's planned CSPs. Sunthurst appreciates that PacifiCorp promptly provided drawings of each Project, and the feeder serving it. However those drawings do not show the start and end of each feeder branch, do not show nearby feeders that may be alternative paths to PacifiCorp's system, and do not show all the projects on the same drawing. Without such detail, Sunthurst is unable to meaningfully study or model the proposed interconnections. As an example of what Sunthurst is requesting, I have attached an excerpt of a feeder map from another utility showing feeders in detail sufficient for 3rd Party review. (**Attachment B**). Sunthurst requests a single drawing showing OCS 024, 062, and 063 POI, PacifiCorp substations serving those Projects, and complete map of all feeders serving those substations, similar to details in Attachment B, or otherwise adequate for evaluating interconnection options.

69kV Transmission System upgrades. Sunthurst learned that PacifiCorp has recently upgraded 69kV transmission in the vicinity of Buckaroo and McKay substations (See **Attachment C**). Sunthurst requests information about those changes (performed and currently planned) to the extent they impact the cost of interconnection to Sunthurst. Will PacifiCorp please provide (a) records documenting the current 69kV protection equipment in the vicinity of Buckaroo, Pendleton, and McKay substations; and (b) descriptions of planned improvements for the same substations?

PacifiCorp's June 4 responses to Sunthurst's questions regarding OCS 063. PacifiCorp's June 4 responses from Mr. Ty Engle (attached as **Attachment D**) repeatedly cite to IEEE 1547-2018 and to PacifiCorp Policy 138 (revised December 2020), which are not currently authorized by the Commission. The *Pacific Power Community Solar Project Interconnection Procedures* approved by the Commission in April 2020 require adherence to IEEE 1547-**2003** standards.¹ This inconsistency between PacifiCorp's documents (SIS Report, FS Report, Interconnection Agreement, and *Procedures*) and Division 082 Rules creates ambiguity regarding which code applies, and when. Does PacifiCorp intend to seek a waiver of the IEEE 1547-2003 requirements from the Commission so that IEEE 1547-2018 has the imprimatur of the Commission? Clarification is requested.

In at least one instance, PacifiCorp's requirements described by Mr. Engle burden OCS 063 with design or performance requirements inconsistent with PacifiCorp's OCS rules set forth in its advice filings. A specific example is section 2.2.5 of Policy 138, cited by Mr. Engle on page 5. It states "[t]he inverter-based DER facility should be capable of injecting or absorbing reactive power as required by voltage regulation functions, up to 44% of the kVA nameplate, at any active power output above 20% of the rated active power." There is no need for such a requirement, unless the OCS will be used to provide ancillary benefits to the system--a burden the OCS rules forbid. PacifiCorp's *pro forma* OCS Interconnection Agreement, Article 1.8, states that "The Public Utility shall not impose additional requirements for voltage or reactive power support outside of what may be required to mitigate impacts caused by interconnection of the Community Solar Project to the Public Utility's system." Sunthurst objects to Section 2.2.5's inclusion because it requires Sunthurst to enlarge its inverter for the sole purpose of providing VAR support beyond what is necessary to mitigate impacts caused by interconnection of OCS 063.² Sunthurst intends to rely on PacifiCorp's SIS Report which requires operation with no intentional reactive power flow (unity power factor) and objects to simultaneously being required to provide reserve reactive power capability that would never be used. Sunthurst requests elimination of all language dealing with operating modes other than unity power factor, or alternatively, language that otherwise comports with Article 1.8.

Sunthurst's additional comments on OCS 062. My June 2 letter requested, among other items, that PacifiCorp please provide the detailed analysis supporting its conclusion, in the OCS 062 SIS Report, that OCS 062 will require re-conductoring of 0.7 miles of distribution circuit. Specifically, the Report does not say whether the conclusion is based upon the Volt-VAR performance or whether this is a drop of generation due to fault. It also does not say whether Volt-VAR capabilities of the OCS 063 inverters can provide voltage regulation adequate to avoid re-conductoring. The SIS Report also does not say whether PacifiCorp modeled the recurrence

¹ The *Procedures* define "IEEE 1547" as follows (emphasis mine):

(15) "IEEE 1547" means the standards published in the **2003 edition** of the Institute of Electrical and Electronics Engineers (IEEE) Standard 1547, titled "Interconnecting Distributed Resources with Electric Power Systems" and approved by the IEEE SA Standards Board on June 12, 2003.

² Enlargement of the inverter is necessary to ensure that OCS 063 could deliver 44% of the kVA nameplate without compromising its ability to simultaneously deliver its full nameplate capacity (kW) of Net Output.

frequency of excess voltage deviations. IEEE 1547-2018 considers the number of occurrences per day as a criterion, not just the magnitude of the change. Requiring re-conductoring because there is one voltage change a month that exceeds the 3% recommendation (for example) is a misuse of the IEEE standard (which says that for events that happen less than 4 times per day, a 5-6% change in voltage is allowable). The 5.2% study value would only trigger RVC mitigation for events more than 4 times per day:

Table G.1—System design planning level for RVCs (IEEE Std 1453)

Number of changes (<i>n</i>)	$\Delta V_{\max}/V$ %	
	≤ 35 kV	> 35 kV
$n \leq 4$ per day	5–6	3–5
$n \leq 2$ per hour and > 4 per day	4	3
$2 < n \leq 10$ per hour	3	2.5

PacifiCorp documentation in its SIS Report does not establish that re-conductoring is warranted under the IEEE 1547-2018 standard. Sunthurst’s engineer has suggested several ways voltage may be controlled such that re-conductoring is not necessary and looks forward to discussing the issue at our OCS 063 SIS Report teleconference.

Sunthurst requests PacifiCorp study alternate feeder configurations at McKay Substation.

The feeder configuration in the vicinity of OCS 024, 062 and 063, as modeled in the SIS Reports, is very different from the feeder configuration described by PacifiCorp in Docket No. UM 2001. Notwithstanding PacifiCorp’s vigorous protest that it bears no liability whatsoever for the accuracy of its published data, nothing prevents PacifiCorp from taking reasonable steps to mitigate the resulting harm to Sunthurst. Sunthurst requests that PacifiCorp consider alternative feeder configurations in the vicinity of OCS 062 and 063. I understand that the choice of feeder configuration involves many subjective choices, and oftentimes multiple alternative solutions are available. The goal of such an investigation is to determine what alternate feeder configurations would raise the MDL, thus reducing the need for substation protection improvements (or alternatively interconnect multiple DERs to the same circuit to reduce duplication of interconnection facilities), without adversely affecting the quality of service to PacifiCorp customers. Sunthurst considered whether it could do the studies itself, but difficulty accessing information, differences in modeling software, and other factors mean that PacifiCorp is much better suited for such an analysis.

Removal of 20% Contingency Requested. In two previous projects (SGIP Queue Nos. Q0666 and Q1045), PacifiCorp agreed to remove general Contingency from the interconnect cost estimate. Sunthurst asks that “Capital surcharge and Contingency” be separated into “Capital Surcharge” and “Contingency” in the OCS 062 and 063 SIS Reports, and that the Contingency be reduced to \$0.

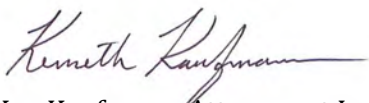
Summary. Without initial responses from PacifiCorp, above, Sunthurst won’t know whether OCS 024, OCS 062 and OCS 063 warrant further development--information Sunthurst should have as part of the interconnection process prior to contracting further with PacifiCorp. Do you have an updated estimate on when Sunthurst can expect the above information? Recognizing that July 9 is not enough time to evaluate PacifiCorp’s responses and have a teleconference to discuss, will

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PacifiCorp agree it is reasonable to extend the July 9 deadline PacifiCorp gave Sunthurst to sign the 062 and 063 Facilities Study (FS) agreements?

In conclusion, I think it is fair to say we have made some progress since June 2, but much work remains. I am concerned about the pace of our progress, and the limitations of our current approach. To that end, I will be contacting you to seek your thoughts on whether there are better ways to resolve our issues, and how that might be achieved. Thank you as always for your consideration.

Sincerely,

A handwritten signature in cursive script that reads "Ken Kaufmann". The signature is written in black ink and is positioned above the typed name and title.

Ken Kaufmann, Attorney at Law
Attorney for Sunthurst Energy, LLC

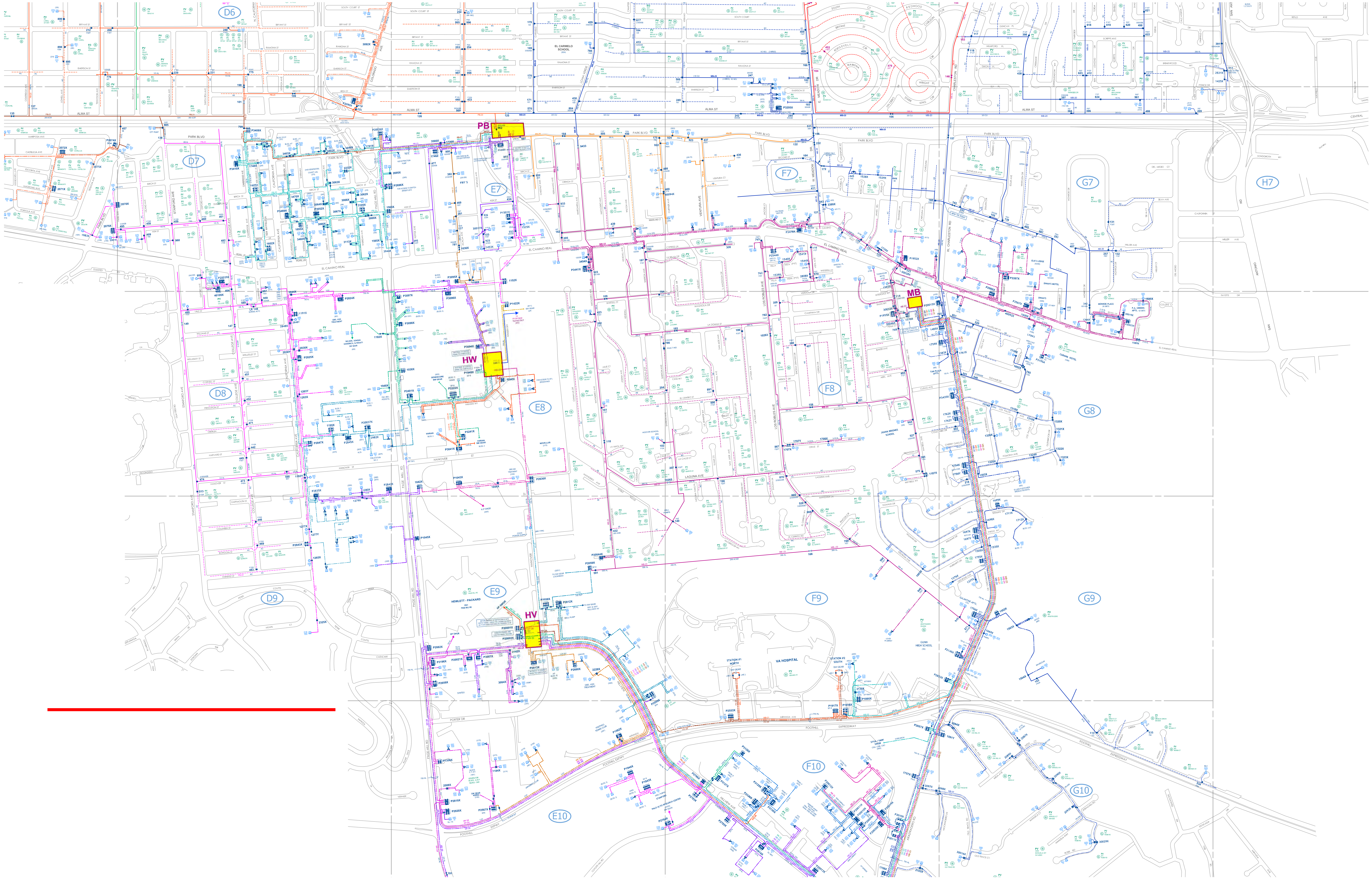
Enclosure

- Attachment A-Page 5 of June 2 Letter from K Kaufmann to Matt Loftus
- Attachment B-Example Feeder Map
- Attachment C-Excerpt from PacifiCorp Transmission Upgrade Presentation
- Attachment D-June 4 letter from Ty Engle to Sunthurst

Attachment A

Technical Questions from Sunthurst re OCS 062 (Nye Solar) System Impact Report (SIR):

1. Overview of Study Changes
 - a. Pac moved POI from Buckaroo 5W203 to McKay 5W856
 - b. About 14000ft (crow flies) to McKay (20k line ft)
 - i. One line Recloser and one line Sectionalizer existing
 - ii. Replace Sectionalizer with Recloser
 - c. About 18000ft (crow flies) to Buckaroo
2. SIR 6.1
 - a. Volt-VAR mode required but no voltage drop analysis to give any indication of how much VAR support is required.
 - b. **Request to PacifiCorp: Please provide all load flow and voltage drop analyses performed that were used by PacifiCorp to determine that Volt-VAR support mode is required. Provide the operating parameters to be implemented including voltage droop and maximum reactive power flow requirements.**
3. SIR 6.3
 - a. Need DTT with 4 terminals
 - i. Substation breaker
 - ii. Line Recloser 5W676
 - iii. New Line Recloser FR UMDXXX
 - iv. OCS062 project recloser
 - b. Questions/requests for PacifiCorp:
 - i. **Request to PacifiCorp: Please provide load flow results used to determine need for 0.7 mile reconductoring, and please explain whether the requirement is based upon the Volt-VAR performance or whether this is a drop of generation due to fault.**
 - ii. **Question for PacifiCorp: Could Volt-VAR capability provide the required voltage regulation without reconductoring?**
 - iii. **Please confirm that the recloser and sectionalizer in the study are really there.**(Google Earth street view with 2019 image dates does not show either the line recloser or sectionalizer shown on Figure 2 of page 6, but does show a recloser on the main line but NORTH of the tap toward OCS062.)
4. SIR 6.4
 - a. SIS says that OCS062 AND OCS024 both contribute to need for 69kV VTs.
 - i. **Please explain why PacifiCorp allocated 100% of 69kV VTs on OCS062, and whether this cost may be shared between OCS062 and OCS024.**
5. SIR 6.5
 - a. Calls for “voltage instrument transformers” to be installed at OCS062
 - i. **Question: Will PacifiCorp accept resistive voltage sensors in lieu of voltage instrument transformers? Please explain.**
6. SIR 6.7
 - a. It looks like some of the power line from McKay north is underground.
 - i. **Question: Why not install radio (like OCS063) rather than 9000ft of ADSS? If line-of-sight is poor, can a repeater solve the problem?**



Pendleton Transmission Reliability Projects

Proposed Project:

- Replace existing three 230-69 kV transformers at Roundup Substation with two larger capacity transformers (125 MVA)
- Reconductor 69 kV line from Roundup Substation to Pendleton Substation
- Reconductor 69 kV line from McKay Switching Station to Buckaroo Substation

Project Outcome:

- Mitigate N-1 contingency issues in Pendleton area
- Provide a regulated 69 kV sub-transmission voltage



Dear Mr. Hale,

See answers below in **red** to the questions provided for OCS063.

Pg 4- Line Diagram for Buckaroo conveniently omits Feeder 5W203 that has operated from substation for decades. Feeder for PendAir should specify 5W201, as well. Please update the substation SLD. **–All three feeders are shown; only 5W202 is labeled because that’s the one proposed to be connected to.**

Pg 6- PAC just replaced the 69kV poles segment that extend well beyond the underbuild portion. Please review this requirement and make sure it reflects the current situation with the new transmission poles installed in 2021. The statement “Transmission structures 9/7, 10/7, and 12/7 require replacement to accommodate the new distribution underbuild.” We request clarification why these 80ft new poles need replaced and why, PAC, who had this OCS063 request filed before the work was done, did not have, their contractor, Titan Electric, from UT gear the poles for this anticipated work, when simple adjustments could have accommodated the request to work without pole replacement? We just want to make sure that new poles are not slated for replacement. – these three poles are – **As part of a separate project, 9/7 and 10/7 are being replaced with 70 ft CL-H1 poles; 12/7 is being replaced with an 80 ft CL-H3. All poles are designed for future conductors known at the time of replacement. Transmission Engineering is aware of these upgrades and will evaluate the need for further modifications as part of the Facilities Study for OCS063. Modifications are not practical at this time as they could add considerable cost and delay to the project currently in construction.**

Pg 8- You state an MDL for 5W202 is 1.62MW. We request certified backup of the measurement records with time. PAC’s UM2000 data clearly shows the MDL is 3.0MW and this source is the value UM1930 was predicated upon.

Below are the MDL calculations for Buckaroo feeder 5W202.

- MW SCADA loadings on the 5W202 feeder under the existing circuit topology readings on 6-14-2020 at 8:13 AM show 2.61 MW with a 15 minute average calculated at 2.66 MW.***
- Using PacifiCorp’s CYME distribution system model it is estimated the MDL on the remaining 5W202 load is 1.65 MW after the load transfer to the new McKay feeder 5W856.***

CYME Daytime Light Load Model for 5W202 under the existing configuration showing 2.69 MW (0.03 MW above the calculated MDL of 2.66 MW).

Load Flow Box

Breaker - CB5W202/BCK_CB5W202

	V base	kVLL	kVLN	i (A)	% Load (Summer)	kVA	%PF	kW	kVAR
A	123.0	12.8	7.4	131.4	21.9	969.9	-88.61	859.4	-449.5
B	123.0	12.8	7.4	133.2	22.2	983.0	-90.18	886.5	-424.8
C	123.1	12.8	7.4	140.3	23.4	1035.8	-91.36	946.3	-421.1
Total:				13.2		2988	-90.08	2692	-1295

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CYME Daytime Light Load Model for 5W202 after McKay Sub feeder 5W856 load transfer (opening gang operated switch 5W56)

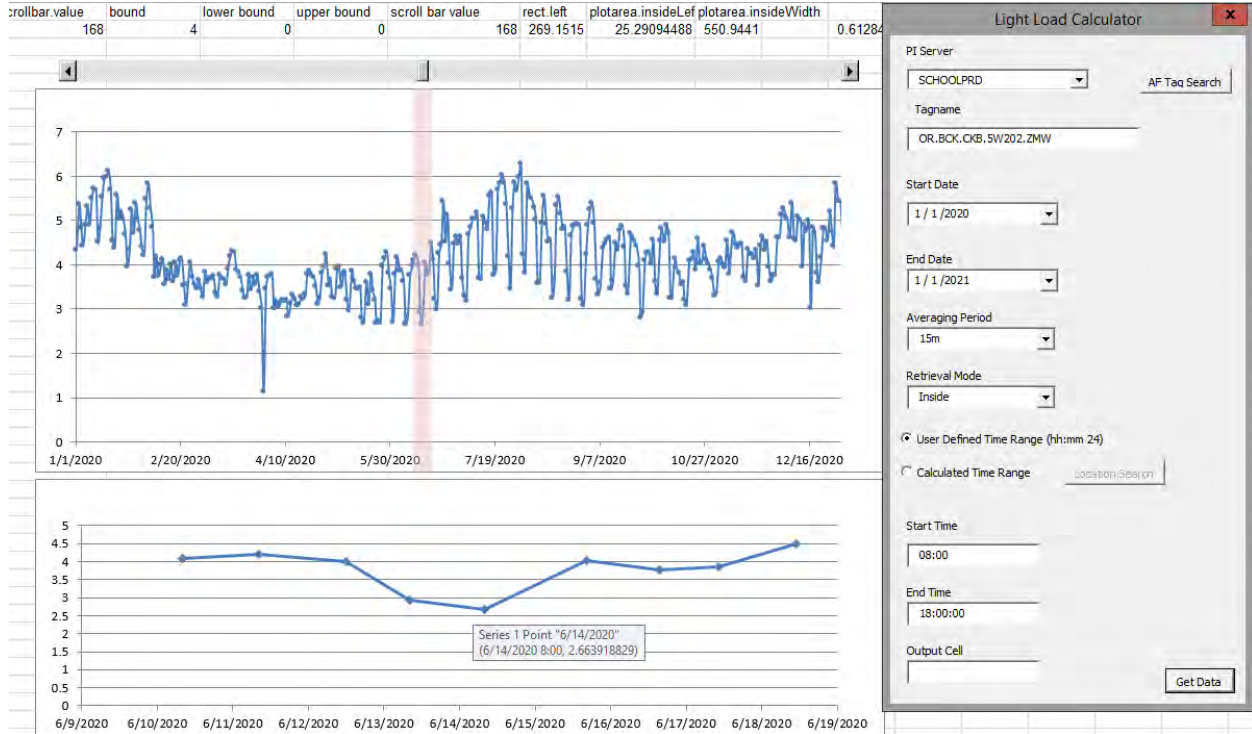
Load Flow Box

Breaker - CB5W202/BCK_CB5W202

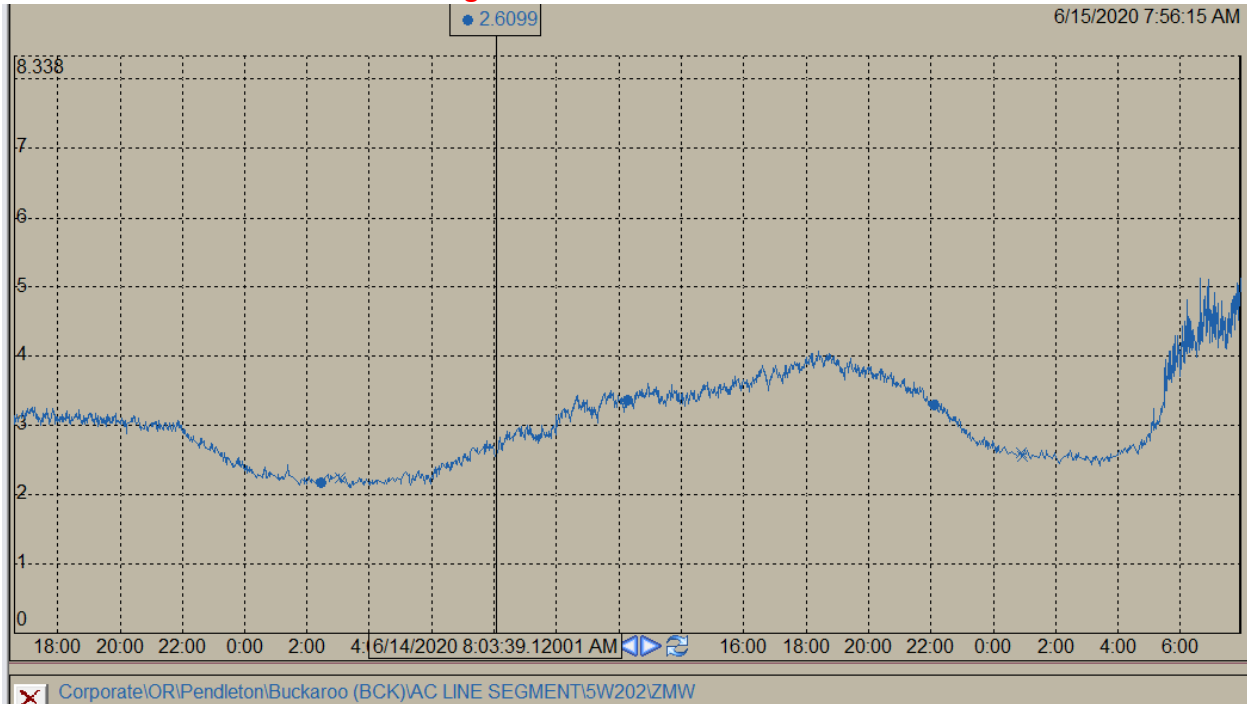
	V base	kVLL	kVLN	i (A)	% Load (Summer)	kVA	%PF	kW	kVAR
A	123.4	12.8	7.4	75.0	12.5	555.1	-94.35	523.8	-184.0
B	123.3	12.8	7.4	80.0	13.3	591.6	-96.13	568.7	-163.0
C	123.3	12.8	7.4	78.5	13.1	580.5	-95.30	553.3	-175.8
Total:				6.6		1727	-95.28	1646	-523

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Light Load calculator showing 5W202 daytime light loading of 2.66 MW on 6-14-20 at 0800 for a 15 minute average



Buckaroo Sub 5W202 SCADA loading for 6-14-2020



Pg 10- Based on the recent extensive discussions in UM2118, we request removal of Surcharges from “Other Costs” as not specifically approved by PUC.

Surcharges will not be removed from “Other Costs”

Pg 12- Q0547 (10MW) and Q0586 (6MW) are no longer a valid “requests for interconnection” because their commercial operation commenced prior to the application, both were operational in 2019. PAC has collected load and generation data since operation and UM2000 data is post operations. Neither job has transmission services exporting from the region per the respective studies. – Q0547 is an active request for 18 MW (not 10 MW). 10 MW is in service, 8 MW is currently scheduled to go into service in 2021 but is not operational therefore will remain. Q0586 will be removed.

We request the expanded breakdown of project after above changes are made for our MV EE to review. Not applicable as no changes have been made. Any updates to the estimate can be provided at the completion of the facilities study.

The Q0586 FSR indicated that 69kV VTs were to be installed but those same VTs are being charged to OCS063. Were the VTs not installed as indicated in the Q0586 FSR? If not, why not? In addition, we would appreciate the actual billing and scope for Q586’s substation related work for our review.

The Q0586 project was originally studied at 10 MW. It was determined based on the total minimum day time load at Buckaroo Substation that 69 kV line relays would be required. The addition of the 69 kV line relays requires the addition of 69 kV VTs. The Q0586 project was reduced in power size to 6 MW. The project was restudied and since it is below the minimum day time load carried from Buckaroo Substation the line relays and the 69 kV VTs were not required. The Q0586 project was built at the 6 MW size.

Please provide the results of all study PAC performed for this application request and basis for PAC charges for interconnection.

The system impact study has been provided which is the only study. PacifiCorp studied this request based on its physical location and the configuration of PacifiCorp’s system at the time the project can reasonably go into service.

Additional customer questions.

Regarding SIR 6.1:

- a. SIR 6.1
 - i. Operate under constant PF mode, (100%), please advise?

Yes – as stated in section 6.1 paragraph one the Applicant is required to operate under constant power factor mode with a unity power factor settings unless specifically requested otherwise. At this time there is no request for a different mode of operation.

- ii. But, must have capacity to operate in other modes and no information about what level of VAR support may be required in the future, please advise?

As stated in section 6.1 paragraph one the project must be capable of operating any mode with any settings within the limits of IEEE Std 1547-2018. See section 5.2 of IEEE Std 1547-2018 for detailed reactive power capability requirements for this project. PacifiCorp Policy 138 section 2.2.4 states voltage regulation capability requirements:

2.2.4 Voltage Regulation Capability

An inverter-based DER facility shall have all of the voltage regulating capability specified by IEEE 1547 clause 5 under “Category B” which includes constant power factor, voltage-reactive power (Volt-VAr), active power – reactive power (Watt-VAr), constant reactive power (Fixed Q), and voltage – active power (Volt-Watt) modes. This functionality is to be disabled by default, but must be activated at the request of PacifiCorp.

PacifiCorp Policy 138 section 2.2.5 states reactive capability requirements:

2.2.5 Reactive Power Capability

The inverter-based DER facility should be capable of injecting or absorbing reactive power as required by voltage regulation functions, up to 44% of the kVA nameplate, at any active power output above 20% of the rated active power.

- iii. Need an indication of the required VAR capacity for future operation, please advise?
[See answer to ii.](#)
- iv. “Based on load flow studies performed by PacifiCorp, what is the largest required reactive support in any possible operating mode? Under what mode of operation and operating conditions is this flow required?”

This project is required to be able to operate in any mode and settings within IEEE Std 1547-2018 as deemed necessary by the Public Utility and at their request. See IEEE Std. 1547-2018 section five for details of the different modes and their requirements.

Thank you,

Ty Engle